CIRCUIT DESCRIPTION SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

COMMON SYSTEMS CIVIL AIR RAID WARNING SYSTEM CODE GENERATING CIRCUIT KEYPOINT TO WARNING STATIONS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.l A function is added to provide a timing interval for the dial pulse receiving circuit.

- C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS
- C.1 Test note 2, page 1 is added.
- D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The winding of relay (FU) was previously connected to contact 2 bottom of (FU) and to contact 4 top of (W4).

D.2 Leads "PU", "PU1", and "Z4" are added.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit generates the signal codes required for the Civil Air Raid Warning System from a Keypoint to Warning Stations.

2. WORKING LIMITS

- 2.1 None.
- 3. FUNCTIONS

3.1 To generate codes as follows:

- 3.11 60 i.p.m. for red signal code.
- 3.12 Two 1/2 second pulses each 4 seconds for the yellow signal code.
- 3.13 Three 1/2 second pulses each 4 seconds for the blue signal code.
- 3.14 A 16 second signal followed by 16 seconds silence for the white signal code.
- 3.2 To furnish each of the above codes over two leads only one of which, for any one code, will be closed at a time.
- 3.3 To prevent sending a partial code when the circuit starts operation.
- 3.4 To start operating under control of the connecting circuit.

3.5 To generate a 16 second signal followed by a 16 second open for timing purposes.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet, the connecting information thereon is to be followed.

- 4.01 Dial Pulse Receiving and Code distributing Ckt. - SD-9567801.
- 4.02 Aux. Ringing Supply & Bat. Distg. Ckt. - SD-81202-01.
- 4.03 Power Ringing Ckt. SD-80885-01*.
- 4.04 Power Ringing Ckt. SD-80515-02*.
- 4.05 Floor Alm. Frame Misc. and Aux. Alm. Ckt. - Crossbar No. 1 Office -SD-25047-01.
- 4.06 Floor Alm. Bd. Motor Alm. Ckt. Panel Office (Bat. Cut-Off) - SD-21202-01.

4.07 Alm. Ckt. Motor Stop and Frame Busy Panel Office (Grd. Cut-Off) -SD-20143-01.

- 4.08 Interrupter Circuit Crossbar No. 5 Offices - SD-25814-01*.
- 4.09 60 and 120 IPM Interrupter Circuit No. 1 or 350A SxS Offices -SD-31606-01*.
- 4.10 Interrupter Relay Circuit No. 355A SxS Offices - SD-31868-01.

*Typical circuit

DESCRIPTION OF OPERATION

5. GENERAL

5.1 When the dial pulse receiving and code distributing circuit requires code pulses, it connects ground to the "ST" lead operating relay (ST). Relay (ST) operated, grounds the "MS" leads to the auxiliary ringing supply and battery distributing circuit or to the power ringing circuit, and also grounds the "ST" lead to the interrupter circuit to start these circuits if they are not already operating. One of these circuits will return 60 i.p.m. ground to operate (P) at that rate - 1/2

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second operated, 1/2 second released. (ST) operated also connects ground to spring 5T of (W4) to control the operation of the "pick up" relay (PU). If (W4) is operated and the "PU" and "PU1" leads are closed, (PU) will operate and lock to (ST) under control of the "PU" and "PU1" leads.

5.2 The operation and release of relay (P) connects ground alternately through (PU) operated to leads "Rl" and "R2" for the red signal code. In a like manner it connects ground alternately to leads "Yl", "Y2", "Bl" and "B2" for the yellow and blue signal codes, under control of contacts on the (W), (W1), (Z) and (Z1) relays. Operation of these relays is described in 5.3

5.3 When relay (P) operates the first time it connects ground to (W) and (Z), but as (Z) is short circuited through its back contact, only (W) operates and locks to (ST). When (P) releases, the short circuit is removed from (Z) which operates on ground from (ST) through (W). On the next operation of (P), (W) is short circuited by ground from (P), but (Z) remains operated until (P) releases. The above cycle of operations is then repeated as long as ST remains operated. Thus (W) and (Z) are operated for 1 second and released for 1 second. (Z) connects ground to (WL) and (ZL), which operate in the same manner as (W) and (Z). (WL) also operates in turn (W2), (W3) and (W4). (W4)

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operates (PU) as described in 5.1. The operation and release of relay (W4) connects ground alternately to leads "W1" and "W2" for the white signal code. The operation of W and Z; W1 and Z1, W2 and Z2, W3 and Z3 and W4 and Z4, and the ground closures to leads "R", "R1", "Y", "Y1", "B", "B1", "W" and "W1" are shown graphically in Note 301.

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5.4 By providing two leads for each signal code, only one of which is closed at a time, the warning stations can be divided into two groups for signaling purposes. In this way twice as many warning stations can be signaled from a given supply of ringing current.

5.5 Each time relay (Z4) operates a 16 second timing pulse is connected to lead "Z4".

6. TAKING EQUIPMENT OUT OF SERVICE

6.1 No provision has been made for taking this circuit out of service as an individual unit. However, this circuit is always associated with a dial pulse receiving and code distributing circuit, and before any maintenance work is performed on either circuit, the dial pulse receiving and code distributing circuit should be taken out of service as covered in the circuit description for that circuit.